

# **Economic Impact of North Dakota Centers of Excellence Program, 2007-2012**

## **---- FINAL REPORT ----**

Dean A. Bangsund, Randal C. Coon, and Nancy M. Hodur<sup>1</sup>

In recent years, economic development has become increasingly linked to technology and information. As a result, policy makers have attempted to facilitate partnerships between universities and private sector businesses. The success of public-private partnerships in areas like the Silicon Valley of California, the Research Triangle of North Carolina, and the Austin, Texas area offers support for the concept of technology-based development. The Centers of Excellence program is North Dakota's initiative to participate in technology and information-based economic development.

The 2003 Legislative session authorized funding for three pilot Centers of Excellence projects. Then in 2005, the Legislature approved Senate Bill No. 2032 expanding the concept into the Centers of Excellence in Economic Development program. The legislation called for a \$50 million state investment over multiple biennia, to be leveraged on a 2-to-1 basis with private sector and other funds. Additionally, \$10 million was authorized for Centers of Excellence Enhancement Grants, \$5 million for Centers of Research Excellence, \$3 million for Base Realignment Grants, and \$4 million for Limited Deployment Cooperative Airspace Projects. Altogether, the Legislature has authorized \$72 million in funding since 2005.

As of June 30, 2012, 20 Centers had been approved by the Centers of Excellence Commission through a competitive process that began in 2005. Valley City State University had one of the 20 approved Centers of Excellence, but it has since concluded operations. Three centers were legislatively approved in 2003. Also, the Centers of Excellence Commission has approved 9 Centers of Excellence Enhancement Grants, Grants for 2 Centers of Research Excellence, 5 Base Realignment Grants, and 2 Limited Deployment Cooperative Airspace Projects. Two of the Base Realignment Grants did not report data for this study because one did not launch by June 30, 2012 and the other did not have expenditures within North Dakota during the study period. The purpose of this report is to estimate the economic impacts of the Centers of Excellence program for the period January 1, 2007-June 30, 2012. The analysis is based on payroll and associated expenditures reported by each Center.<sup>2</sup>

### **Methods**

The initial task in any impact assessment is estimating the direct impacts (or "first-round effects") of the activity being studied. In this study, information on in-state expenditures and direct employment, were drawn from reports submitted by each Center. The North Dakota Input-Output Model was used to estimate secondary economic impacts based on these data.

---

<sup>1</sup>The authors are research scientist, research specialist, and research assistant professor, respectively, in the Department of Agribusiness and Applied Economics, North Dakota State University, Fargo.

<sup>2</sup>In 2009, the Centers reported their expenditures for the period January 1, 2008 to June 30, 2009. This was because of a change in reporting period from calendar to fiscal years.

The North Dakota Input-Output Model consists of interdependence coefficients or multipliers that measure the level of business activity generated in each economic sector from an additional dollar of expenditures in a given sector. (A sector is a group of similar economic units, e.g., firms engaged in retail trade make up the retail trade sector.) For a complete description of the input-output model, see Coon and Leistriz (1989). The model estimates the changes in gross business volume (gross receipts) for all sectors of the area economy resulting from the direct expenditures associated with the Centers of Excellence program. The increased gross business volumes are used to estimate secondary employment and tax revenues based on historic relationships. The procedures used in the analysis are parallel to those used in estimating the impact of other facilities and activities (Leistriz and Coon 2008; Bangsund and Leistriz 2010, 2011; Hodur et al. 2006). Empirical testing has confirmed the model's accuracy in estimating changes in levels of economic activity in North Dakota. Over the period 1958-2010, estimates of statewide personal income derived from the model averaged within 4 percent of comparable values reported by the U.S. Department of Commerce (Leistriz et al. 1990; Coon et al. 2012).

## **Results**

### Period Review (July 1, 2011 - June 30, 2012)

The economic impacts associated with the Centers of Excellence program for July 1, 2011-June 30, 2012 are summarized in Table 1. The direct economic impacts of Centers and partner activities totaled \$31.4 million, based on expenditures from 20 centers<sup>3</sup> and disbursements from 9 Centers of Excellence Enhancement Grants, 3 Base Realignment Grants, and 2 Limited Deployment Cooperative Airspace Projects that begun operations prior to June 30, 2012. The direct economic impacts for this period are smaller than for the previous period. A couple of things have changed from last year's analysis. The Valley City State University Enterprise University concluded operations of the Centers of Excellence Program, and the North Dakota State University Research and Technology Park Graduates did not provide the partner's expenditure data. The Research and Technology Park Graduates are not required to provide their data and do so on a voluntary basis. The absence of the Research and Technology Park Graduates expenditures data results in a significant understatement of the economic impacts. The total economic impact (contribution) was \$95.8 million. Direct employment by Centers and partners totaled 1,082 full-time equivalent positions.

### Cumulative Review (January 1, 2007 - June 30, 2012)

---

<sup>3</sup>No expenditures were reported for the NDSU Beef Systems Center of Excellence because it was specifically exempted by the 2009 Legislature from reporting requirements of the Centers of Excellence program, Valley City State University concluded operations of its Center of Excellence, and three NDSU Centers of Excellence and Research Excellence (Center for Advanced Technology Development and Commercialization, Center for Life Sciences Research and Applications, and Center for Technologically Innovative Process and Products) did not launch before June 30, 2012.

The cumulative economic impacts of the program for January 1, 2007- June 30, 2012 are summarized in Table 2. The total direct impact was \$216.0 million and the gross business volume (direct and secondary effects) was \$634.6 million. Direct employment increased over 266 percent in 4.5 years from about 296 positions in 2007 to about 1,082 jobs in fiscal year 2012 (Table 2). Over the period, a number of secondary jobs also were supported as outlined in Table 2.

## **Discussion**

The Centers of Excellence program is a major initiative of the State of North Dakota to facilitate the development of technology and information-based businesses and industries. The program partners the research and development expertise of North Dakota's colleges and universities with private companies to commercialize new products, services, and technologies. The economic effects of those partnerships vary among the Centers and over time as the incubation of ideas, processes, and technologies evolve. Many of the Centers have only recently been created, while others have been operational for several years. Over time, it is anticipated that state investment in these initiatives will produce positive economic benefits to the regional economy.

One measure of the positive benefits to the North Dakota economy is how effectively the Centers have leveraged state appropriations with non-state funds. As of June 30, 2012 the Centers have collectively obtained \$190.0 million in matching and leveraged funds. Over that same period, the Centers collectively spent \$44.1 million in state funds. The Centers have leveraged about \$4.30 in additional non-state funds for \$1 of state funds.

Another measure of the effects of the Centers of Excellence program is job creation. Since 2008, the Centers have created an average of 998 direct jobs in the state. When secondary employment is included, the Centers have supported 1,356 jobs per year. Further, the direct jobs created by the Centers are relatively high paying. The Centers reported direct employment of 1,082 jobs with wages and benefits totaling \$69,221,186 in fiscal year 2012. Salaries and benefits averaged about \$63,975 per job, nearly 25 percent higher than the state average for the same period (U.S. Bureau of Economic Analysis 2012).

The gross business volume attributable to the Centers is considerable. With a direct economic impact of \$216.0 million and total impact of \$634.6 million for the period January 1, 2007-June 30, 2012, the economy-wide effects are encouraging especially considering that several Centers have only recently been established.

Clearly the Centers of Excellence program has produced positive economic outcomes for the state. Matching and leveraged dollars indicate that the Centers have been successful in creating valuable partnerships with private companies. These partnerships have resulted in job creation, growth in economy-wide business volume, and additional state-level tax revenue. The economic effects of the Centers of Excellence program to date are encouraging.

## References

- Bangsund, Dean A., and F. Larry Leistritz. 2011. *Economic Contribution of the Soybean Industry to North Dakota*. AAE Rpt. No. 678. Fargo: North Dakota State University.
- Bangsund, Dean A., and F. Larry Leistritz. 2010. *Petroleum Industry's Economic Contribution to North Dakota in 2009*. AAE Rpt. No. 676. Fargo: North Dakota State University.
- Coon, Randal C., Dean A. Bangsund, and Nancy M. Hodur. 2012. *North Dakota Input-Output Model Data Base*. Fargo: North Dakota State University.
- Coon, R. C., and F. L. Leistritz. 1989. *The North Dakota Economy in 1988: Historic Economic Base, Recent Changes, and Projected Future Trends*. Agr. Econ. Stat. Series No. 45. Fargo: North Dakota State University.
- Hodur, Nancy M., Dean A. Bangsund, F. Larry Leistritz, and John T. Kaatz. 2006. "Estimating the Contribution of a Multi-Purpose Event Facility to the Area Economy," *Tourism Economics* 12 (2): 303-316.
- Leistritz, F. Larry and Randal C. Coon. 2008. *Socioeconomic Impacts of the Langdon Wind Energy Center*. AAE Rpt. No. 627. Fargo: North Dakota State University.
- Leistritz, F. Larry, Steve H. Murdock, and Randal C. Coon. 1990. "Developing Economic-Demographic Assessment Models for Substate Areas." *Impact Assessment Bulletin* 8 (4): 49-65.
- U.S. Bureau of Economic Analysis. 2012. U.S. Economic Accounts: State and Local Area Personal Income. <http://www.bea.gov/index.htm> (Accessed December 2012). U.S. Bureau of Economic Analysis, U.S. Department of Commerce, Washington, D.C.

Table 1. Period Review -- Direct, Secondary, and Total Economic Impacts of North Dakota Centers of Excellence and Partner Activities, July 1, 2011 through June 30, 2012

Economic Sector	Expenditures/Receipts		Total
	Direct	Secondary	
	----- \$000 -----		
Construction	2,003	2,479	4,482
Communications & public utilities	803	3,303	4,106
Retail trade	1,084	20,669	21,753
Finance, insurance & real estate	4,500	4,623	9,123
Business & personal services	3,139	1,803	4,942
Professional & social services	570	2,628	3,198
Households	19,284	21,198	40,482
Other <sup>1</sup>	0	7,684	7,684
Total <sup>2</sup>	31,383	64,387	95,770
Employment (full-time equivalents)	1,082	265	1,347

<sup>1</sup> Includes agriculture, mining, transportation, manufacturing, and government.

<sup>2</sup> Direct, secondary, and total impacts reflect the conclusion of operations at Valley City State University Enterprise University and the absence of expenditures data for the North Dakota State University Research and Technology Park Graduates.

Table 2. Cumulative Review -- Direct, Secondary, and Total Economic Impacts of North Dakota Centers of Excellence and Partner Activities, January 1, 2007 through June 30, 2012

Economic Sector	Expenditures/Receipts		
	Direct	Secondary	Total
	----- \$000 -----		
Construction	40,771	15,966	56,737
Communications & public utilities	3,967	20,853	24,820
Retail trade	13,706	133,066	146,772
Finance, insurance & real estate	22,537	34,766	57,303
Business & personal services	9,482	11,283	20,765
Professional & social services	4,437	16,585	21,022
Households	120,251	134,529	254,780
Other <sup>1</sup>	850	51,530	52,380
Totals	216,001	418,578	634,579
Employment Review <sup>2</sup>	-----full-time equivalent positions -----		
July 1, 2011 - - June 30, 2012	1,082.00	265.00	1,347.00
July 1, 2010 - - June 30, 2011	973.00	355.00	1,328.00
July 1, 2009 - - June 30, 2010	1,017.20	318.00	1,335.20
January 1, 2008 - - June 30, 2009	921.50	492.00	1,413.50
January 1, 2007 - - December 31, 2007	296.25	408.00	704.25
Estimated State Tax Collections	----- \$000 -----		
Personal Income Tax	1,804	2,018	3,822
Sales and Use Tax			6,796
Corporate Income Tax			1,059
Totals			11,677

<sup>1</sup> Includes agriculture, mining, transportation, manufacturing, and government.

<sup>2</sup> Employment cannot be summed across years. Employment figures were presented for each analysis period for sake of comparison over time. Secondary employment for the January 1, 2008-June 30, 2009 figure represents an annualized estimate for the period.